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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,063	12/15/2003	Young-Hun Seo	OPP031058US	4273
36872	7590	07/26/2006	EXAMINER	
THE LAW OFFICES OF ANDREW D. FORTNEY, PH.D., P.C. 401 W FALLBROOK AVE STE 204 FRESNO, CA 93711-5835			MITCHELL, JAMES M	
		ART UNIT	PAPER NUMBER	
			2813	

DATE MAILED: 07/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/736,063	SEO, YOUNG-HUN	
	Examiner James M. Mitchell	Art Unit 2813	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### **Status**

1) Responsive to communication(s) filed on 05 April 2006.  
 2a) This action is FINAL.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### **Disposition of Claims**

4) Claim(s) 1-12 and 14-21 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1-12 and 14-21 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### **Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### **Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
     1. Certified copies of the priority documents have been received.  
     2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
     3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### **Attachment(s)**

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
     Paper No(s)/Mail Date \_\_\_\_\_.

4) Interview Summary (PTO-413)  
     Paper No(s)/Mail Date. \_\_\_\_\_.  
 5) Notice of Informal Patent Application (PTO-152)  
 6) Other: \_\_\_\_\_.

## DETAILED ACTION

This office action is in response to applicant's request for continued examination filed April 5, 2006.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, 5, 8, 11, 12 and 14-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn (U.S. 5,612,237) in combination Rhodes (U.S. 2004/0094784).

Ahn (Fig. 3A-F) discloses:

(cl. 1) a method of forming a gate in a semiconductor device, the method comprising: forming a trench (e.g. groove in substrate; Fig. 3C); forming a gate oxide layer (25) on the semiconductor substrate; forming on the semiconductor substrate a sacrificial layer (23) selectively etching the sacrificial layer to form sidewall openings over an area of the substrate including the trench (Fig. 3C); forming a polycrystalline silicon layer (26) on the area of the gate oxide exposed through the sidewall opening and on the sacrificial layer; etching (Abstract) of polycrystalline silicon layer such the sidewall gates (26A,B) on sidewall opening (Fig. 3E); and removing the sacrificial layer (Fig. 3F);  
(cl. 2, 8) wherein the sacrificial layer comprises nitride Abstract);  
(cl. 6, 12) where the thickness of sacrificial determines/affects width of gates (Fig 3D-E);

(cl. 7) wherein width of opening (e.g. both gates in opening space) corresponds to a width from one gate to an adjacent gate (Fig. 3D-3E);

(cl. 14) wherein width of the sidewall gates corresponds to a desired width of a gate (e.g. to be functional);

(cl. 15, 16, 17) wherein etch back includes etching gates to a minimum width (e.g. the width predetermined);

(cl. 18, 19) further depositing a photoresist (30) on the sacrificial layer (23)a and patterning to form an opening exposing a predetermined area the sacrificial layer (Fig. 3A);

(cl. 20, 21) wherein the opening comprises/ encompasses an area on the substrate from where one sidewall gate will be formed to where an adjacent gate will be formed (Fig. 3C-E);

Ahn further shows a dry etch, but does not appear to explicitly disclose that it is anisotropically or an etch back process.

Rhodes utilizes a dry anisotropic etch (Par. 0010) that comprises an etch back<sup>1</sup>.

It would have been obvious to one of ordinary skill in the art to incorporate an anisotropic etch as the etch process disclosed by Ahn in order to provide a dry etch as required by Ahn (Col. 3, Lines 24-26).

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<sup>1</sup> Applicant CLAIM 5 admits that an anisotropic etch comprises etch back.

Claims 3, 4, 9 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahn (U.S. 5,612,237) and Rhodes (U.S. 2004/0094784) as applied to claim 1, 2, 7 or 8, and in further combination with Kim et al. (U.S. 20025/0001935).

Neither Ahn nor Rhodes appear to show that its etch is wet etching, However Ahn discloses the same invention except that it teaches a dry etch instead of a wet etch, Kim shows that either a wet or dry etch are equivalent processes that form the same structure known in the art. Therefore, because these processes are art recognized equivalents at the time the invention was made, one of ordinary skill in the art would have found it obvious to substitute a process of using a wet etch instead of a dry etch to remove material.<sup>2</sup>

### ***Response to Arguments***

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (571) 272-1931. The examiner can normally be reached on M-F 8:00-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carl Whitehead Jr. can be reached on (571) 272-1702. The fax phone

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<sup>2</sup> Likewise, Rhodes (Par. 0010) discloses that "other etching process" may be used.

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jmm, J.D  
July 20, 2006

  
CARL WHITEHEAD, JR.  
SUPERVISORY PATENT EXAMINER  
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